DOCUMENT RESUME

ED 062 712 EA 004 289

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TITLE Objective-Based Management Strategies for Large Educational Systems.
PUB DATE Apr 72
NOTE 17p.; Paper presented at American Educational Research Association Annual Meeting (57th, Chicago, Illinois, April 3-7, 1972)

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS Decision Making; Educational Administration; *Formative Evaluation; Management; *Management Systems; *Objectives; Speeches; *Summative Evaluation; *Systems Analysis

ABSTRACT

This speech analyzes the critical ingredients of an objectives-based management system for (1) goal determination--decisions regarding the direction of the educational enterprise; (2) progress monitoring--the formative evaluation of the system's enroute success in attaining its goals; and (3) output appraisal--the summative evaluation of the system's effectiveness. Several empirical studies, conducted by UCLA and the Instructional Objectives Exchange, are reported insofar as they bear on these three phases of large scale educational management. (Author)

ED 062712

EA 004 289

A presentation in a symposium, Perspectives on Management Systems Procedures in Education, given at the annual meeting of the American Educational Research Association, April 3-8, 1972, Chicago, Illinois.

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OBJECTIVES-BASED MANAGEMENT STRATEGIES FOR LARGE EDUCATIONAL SYSTEMS

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There is an apparent defect in human nature which disinclines us to subject any enterprise to careful scrutiny until we sense it is in some way defective. Without debating whether this failing stems from original sin or is merely an acquired shortcoming, there is little doubt that we are currently witnessing the results of this tendency in the field of education.

American citizens in increasing numbers have become disenchanted with the quality of our educational system, and the magnitude of this disenchantment has now passed the critical point, so that rhetoric no longer satisfies and corrective action is being demanded. The problem facing us now is easier to articulate than to answer, namely, "How should we go about promoting improvements in the educational enterprise?"

Systems Analysis Strategies

Some educators are turning to systems analysis methodology as a possible source for satisfactory answers to this perplexing question. For certain of these systems analysis proponents one senses an almost religious devotion to their methodology, a devotion in which the litany of imput analysis, output analysis, and servoloop

feedback must be chanted daily -- or at least in every published article and speech.

For me, however, systems analysis approaches derive their merits not because they border on the occult but, rather, because they reflect a rational attempt to illuminate the arenas in which we must make educational decisions. If most people are left to their own devices when they must make decisions, they will usually find that erroneous perceptions of reality and unconcious biases render those decisions less than satisfactory. Surely there are many wise human beings who will reach enlightened decisions which all of us would applaud, but there are many others who do not operate as meritoriously. If the decisions affect only themselves, we are not all that upset if the wrong choice is made; after all, an individual pretty well has the right to muck up his own life if he wishes. But in the field of education we see that imprudent decisions can penalize thousands of students, thus we cannot remain as sanguine regarding intuitively based decision-making. Therefore we find an increasing number of people, both educators and non-educators, advocating the use of more formal mechanisms for making decisions regarding large scale educational enterprises. Customarily, these mechanisms have taken a form which more or less resembles a systems analysis approach.

The distinguishing feature of a systems analysis strategy is implied by its name. Clearly, there is an attempt to analyze a system of some sort, in this instance an educational system. But equally critical is the implication that this analysis will be a <u>systematic</u> one. Indeed, many people are enamoured of systems analysis approaches for precisely that reason, i.e., they tend to

reduce the capricious decison making which is so characteristic of most human endeavors.

There is another dimension characteristically associated with systems analysis approaches which should be noticed, namely, a reliance on evidence of the system's effects. This orientation is in contrast to alternative approaches which, although systematic and analytic, are not essentially empirical methodologies. For instance, analytic philosopical approaches are generally not considered to be systems analysis strategies even though they may epitomize rigorous analysis.

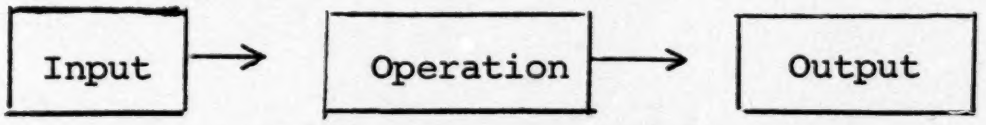
Large Scale Educational Systems

This discussion will be restricted to the consideration of large scale educational enterprises such as a state school system or a large school district. For example, California legislators are currently undertaking a serious appraisal of the state's master plan for higher education. One of the considerations of the planners relates to the development of an evaluation system which will permit the state legislators and other concerned citizens within the state to judge the quality of the California higher education system. The remarks in the following paper will pertain to the management of such an evaluation system.

This does not suggest that the following observations are inappropriate for small systems such as a moderate sized school district or even a single school. Yet, in general, the focus will be on the recommendations for systems of sufficient magnitude to warrant the considerable investment in carrying out the procedures which will be described.

Objectives-Based Systems Analysis

In most systems analysis models there are three sets of questions to be answered. These questions are associated with the three major phases of managing a system, as follows:



A Simplified System Model

There are questions regarding which inputs should be made to the system, that is, the purposes for which the system exists and the types of resources which will be used to attain those purposes. A second set of questions is associated with the actual operation of the system, that is, how well are things working? A final group of questions stem from an appraisal of the output of the system, that is, was the effectiveness of the system such that it should remain essentially unmodified or do we have to make some changes in it?

Now there is nothing inherent in systems analysis models which require one to employ instructional objectives as an organizing rubric in the implementation of a model. There may be preferable classification schemes for organizing the data which must be processed in a systems analysis scheme. The present paper, however, will be addressed to a systems analysis strategy in which instructional objectives play a prominent role. The choice to employ objectives as the organizing dimension stems from a belief that statements of instructional objectives can serve as a parsimoneous vehicle for communicating the information which must be considered at various points in anal-

yzing the system. Note, for instance, that those individuals operating the National Assessment of Educational Progess, surely dealing with a large scale educational enterprise, have chosen to employ statements of instructional objectives as their organizing rubric.

For example, a learner's status in connection with an educational system may be represented by his or her performance on an examination of some sort. Rather than requiring a decision maker to scrutinize the entire examination, we may convey an idea of what the examination entails by identifying the learner competencies it was designed to measure. Often these competencies can be described as a <u>desired</u> status for the learner, hence the equivalent of an instructional objective. In addition, many educators are quite familiar with the general concept of instructional objectives, this topic having received ample attention during the past decade.

To reiterate, it is not requisite to employ instructional objectives as the organizing theme for an educational systems analysis model. Nonetheless, the use of objectives for this purpose seems to offer some advantages and, accordingly, the remainder of this paper will describe a systems analysis model for large educational enterprises which prominently employs instructional objectives.

<u>Measurable</u> <u>Objectives</u>

It is important to note at the outset of this discussion that, unless otherwise noted, we will employ the phrase "instructional objective" to represent a <u>measurable</u> instructional objective. Because measurable objectives communicate one's instructional intentions with less ambiguity than broad, general objectives, it would seem particu-

larly important to use such objectives in a rational decision making scheme where any extra system noise (such as ambiguious symbology) will reduce the quality of the decisions. In recent years, of course, there have been numerous treatises written regarding technical questions of how such measurable objectives should be optimally formulated.

Returning now to the general questions which an educational systems analyst must attempt to answer, we can turn first to what is perhaps the most important question facing any systems designer. This question is, "To what ends should the system be committed?" Putting it another way, "Why should the education system be there in the first place?" For an objectives-based systems analysis approach, this essentially becomes the problem of goal determination.

Goal Determination

In general, the proponent of systems analysis approaches subscribes to a classic means/ends paradigm. It is anticipated that if proper ends can be identified it will be worth the trouble to test the efficacy of alternative means to achieve those ends until certain means can be identified which do the job. In the field of education we are becomming increasingly more sophisticated in designing instructional sequences. It thus becomes increasingly imperative to identify the most defensible goals of our educational systems so that improved instructional means can be directed toward the paper ends.

There are at least two approaches to specifying the appropriate objectives for a large scale educational system, and these are somewhat analogous to an inductive versus a deductive approach. Charac-

teristically, we have employed an inductive strategy over the years in education. According to this scheme the educational planner consults various groups with a series of general questions such as "What do you want our schools to accomplish?" People typically respond to such questions with varying degrees of specificity, so it is usually up to the educational planner to synthesize their somewhat diffuse reactions and translate them into more or less definitive goal statements. Ralph Tyler's curriculum model which has, at least at a theoretical level, been quite influential during the past several decades represents such an approach.

An alternative attack upon the goal determination problem has become available in recent years through the establishment of large pools of measurable instructional objectives. Various clienteles can rate objectives from these pools as to the appropriateness of their inclusion in the curriculum of a given education system. In this latter approach, therefore, we do not try to derive statements of objectives from the value preferences and informal assertions of people; rather, we present people with objectives from which they choose those they consider most important.

Perhaps because the latter approach seems to offer a greater possibility of systematization through technical refinement, it has received more attention during recent months. Particularly as a consequence of the <u>needs assessment</u> operations required by federal ESEA Title III funding programs, we find more and more educators who are attempting to rigorously establish objectives for large scale educational endeavors. A number of these efforts have involved the use of deductively designated educational objectives.

The general strategy in an objectives-based goal determination operation involves presentation of alternative sets of educational objectives to groups who have a stake in deciding what the goals of the system ought to be. These groups then rate, rank, or in other ways display their preferences regarding those objectives. The expressed preferences of the various groups are then surveyed by those who must ultimately decide on the systems' goals and, hopefully, more enlightened judments regarding what the system's goals ought to be can be made on the basis of such preference data.

The somewhat new feature of this approach to goal determination involves the use of measurable objectives. In previous efforts to employ this general strategy educators often used loose, nonmeasurable goals which almost served as Rorschach ink blots for those expressing their preferences, that is, people read into nebulous goal statements almost anything they wished. As a consequence, it was extremely difficult to make reasonable contrasts among the preferences of various groups. With the use of measurable objectives, fortunately, ambiguity is reduced, and as a consequence differences among various clienteles are more directly a function of their real differences in values rather than confusion regarding the meaning of certain goal statements.

The kinds of groups which might be involved, of course, will vary from one educational enterprise to another. For instance, in the California higher education evaluation system it would seem imperative to involve student groups from the various types of higher education institutions within the state, that is, community collegees, state colleges, and universities. It would seem equally important to involve citizen groups of various kinds, e.g., parents, businessmen,

and other public spirited citizens. This would be an ideal opportunity, for example, to secure preference inputs from ethnic and other minority groups who often feel large educational systems are unresponsive to their particular curricular preferences. It might be particularly appropriate to secure the reactions of a group of specially designated futurists whose charge would be to consider higher education objectives in light of their suitability for the 1980's and 1990's, not merely for the next few years. The preferences of these groups can be coalesced and represented in straightforward numerical form in any one of several methods.*

To illustrate an alternative, somewhat less quantitative method of establishing priorities among competing objectives, Professor Robert E. Stake of the University of Illinois has recently devised an approach to priorities planning in which the decision makers consider data such as the preferences of various clienteles. However, they also survey the system's requisite resource allocations, the payoff probabilities of various objectives, and the relevant contingency conditions, that is, circumstances which call for change in instructional procedures.**

Having established the preferred objectives of a system, an important second step in the goal determination is to discover the degree to which the target learners can already display the hoped for behaviors designated by the various reference groups. This is where measurable instructional objectives offer considerable

*See, for example, "Determining Defensible Goals via Educational Needs Assessment," Vimcet Associates, 1971, P.O. Box 24714, Los Angeles, California 90024.

**Stake, Robert E. Priorities Planning: Judging the Importance of Alternative Objectives, Instructional Objectives Exchange, 1972.

advantages, for since the objectives which have been rated by the various groups are stated in explicit and measurable terms, it is a relatively straightforward task to devise measuring devices from those objectives and, as a consequence, to measure the learner's status.

Now we would certainly employ item and person sampling techniques in this approach in order to conserve testing time and to make the task economically feasible. But by using such techniques, whereby only certain students are sampled and those sampled completed only segments of the total measuring devices, we can certainly measure student attainment of the high priority goals established via the previous rating/ranking procedure.

The next step, then, is to contrast the learners' status with the high priority goals and decide which of these we wish to direct our educational enterprise toward. Clearly, there are still a great many value judgments to be made at this point, but the hope is that by making the decisions as heavily data-based as possible, superior decisions will be made.

This system of goal determination by having different clienteles rate extant objectives has been tried out for the past two years by the Instructional Objectives Exchange (IOX) with some interesting results.* Working with several school districts in Southern California, IOX has secured a number of ratings of different objectives within the IOX collections by students, teachers, parents, and futurists. Various modifications in the directions to the rater

*Popham, W. James Providing Wide Ranging, Diversely Organized Pools of Instructional Objectives and Measures, Final Report for the U.S. Office of Education (Project No. 14-0563, Grant No. OEG-0-9-140563-4635(085), Department of Health, Education, and Welfare, 1971.

groups have yielded some insights regarding the suitability of such matters as the inclusion of sample measurement items to further clarify the meaning of the objective, the use of rankings versus ratings, etc. Perhaps the most important conclusion drawn from these studies relates to the number of objectives to be rated. It now appears to the IOX staff, in contrast to earlier expectations, that it is simply unwise to present a vast array of instructional objectives to rater groups. In other words, even though in certain of the collections of objectives currently distributed by the Instructional Objectives Exchange there are upwards of one or two hundred objectives, it makes little sense to attempt to secure ratings of so many objectives. Frankly, the educational decision maker generally is not able to process the resulting data from such rating analyses. Instead, the conclusion from the IOX work to date suggests that it would be far better to present a more moderate number of content general objectives, that is, measurable objectives which describe a class of learner behaviors rather than a single series of specific test items, and have these more general objectives rated by appropriate groups.

This is a particularly difficult procedure because one of the more persistent problems having to do with the technology of objectives concerns the level of generality of those objectives. Individuals working with instructional objectives since Ralph Tyler's early efforts have pointed out that the level of specificity question or, conversely, the level of generality issue, is one of the most important questions to be resolved in the field of instructional objectives. Yet no one seems to have up with a very satisfactory solution. Our general estimate at this point, however, is that we must find some way to present larger "chunks" of educational

objectives to various groups for ratings. Ending up with more than twenty-five or thirty objectives which must be rated presents, to most humans, an unmanagable intellectual task.

It is interesting to note that in certain relatively large school districts in the State of California the number of reading objectives has been reduced to only three or four, thus a single objective, e.g., a student's ability to decode twenty-five words randomly drawn from a list of 500, serves to represent the bulk of that district's reading effort.

It is quite apparent that more attention must be given to the matter of how general an objective should be in order for it to prove servicable in this type of situation. At one extreme, however, the experience at IOX to date suggests that far fewer objectives be employed than we have characteristically been using.

Progress Monitoring

The second set of questions of concern to those involved in decisions regarding educational systems concerns the appraisal of the progress of the system toward its stipulated goals. One relatively straightforward method of discerning the degree to which the system's goals are being accomplished involves the administration of criterion-referenced tests associated with the various system goals so that indications of learner progress toward those goals can be secured. Goals which, according to measured learner progress, are not being achieved can be attacked with alternative instructional strategies, additional resources, etc. Goals which are being achieved on schedule permit the inference that the instructional program is working as well as needed. It is even conceivable, of course, that some goals will be achieved ahead of schedule, thereby permitting

a shifting of resources toward less effective instructional activities.

It is particularly important in assessing progress toward system goals to gather the requisite data as economically as possible. Once more, matrix sampling (a technical term for item sampling combined with person sampling) is a valuable ally of the educational evaluator. It is even possible, when resources are short, to combine matrix sampling with goal sampling via a technique whereby progress toward only certain goals is monitored. Such an approach, of course, does not give information about all of the system's goals, hence, suffers from the defect of supplying only partial information. Nonetheless, where a system simply does not have the financial resources to investigate satisfactorily the progress toward all goals, the use of goal sampling may represent a reasonable alternative.

It is at this juncture that the evaluator should be particularly attentive to unanticipated consequences of the educational system's operation. Whereas educational designers can spell out carefully the hoped-for outcomes of an educational enterprise, it is often the case that some unintended and aversive consequences ensue which were simply unforseen by the instructional designers. Michael Scriven,* in a recent paper, argues cogently for the use of goal free evaluation in which the educational evaluator is attentive to the consequences of an educational system, not to the rhetoric of the instructional designers. Scriven suggests that under certain circumstances it may be more judicious to examine what happens as a consequence of the program rather than what the instructional designers say will occur via their stated objectives. Whether one uses goal free evaluation approaches or simply employs considerable circumspection regarding

*Scriven, Michael, Goal Free Evaluation, NIE working paper, 1972.

what might have gone wrong, it is quite important to attend to all of the effects of a program, not only those which were intended.

Output Appraisal

The final set of questions regarding the management of a large scale educational system concerns the final quality of its results. Once more, since we are using objectives as an organizing rubric, it is possible to develop criterion-referenced tests which are congruent with those objectives and administer them on a matrix sampling basis to the learners served by the system. Results on such measures, combined with measures of unanticipated consequences akin to those described in the previous paragraph, will yield the kind of evidence necessary to reach a judgment regarding the quality of the educational enterprise.

A particularly thorny problem arises related to the manner in which results of such an analysis should be reported. Educational evaluators are only now beginning to wrestle seriously with alternative vehicles for reporting evaluative results in such a way that decision makers can take appropriate action based on the evaluation data. All too frequently we find evaluation endeavors resulting in encyclopedic final reports which only a person of great devotion has the patience to read completely. Brevity is a desirable criterion in reporting results of evaluation studies irrespective of the type of evaluation report involved.

Again, the organizing theme for evaluation, at least for the approach being described here, would be the use of instructional objectives. Progress toward the major instructional objectives adopted by the educational system would be reported to the appropriate decision making groups, e.g., local school boards, state school

boards, university regents, etc. In a general before-after model it is important to present the data in as succinct a fashion as possible so that those utilizing the results can make more sense out of them. Here is where the educational evaluator will have to be particularly judicious in the data he selects to report and the manner in which those data are described.

Theory and Practice

In the foregoing paragraphs a general strategy for the management of large educational enterprises has been described. Clearly, the discussion has been at a very general, not a nuts and bolts level. Sometimes one has the feeling that in propounding a given theoretical point of view an effort to implement it in practice will result in chaos. The technical problems are seen as too serious to work out.

For example, I often hear an aptitude x treatment interaction specialist suggest that if we could only sort out pupils' learning styles and judiciously mesh them with relevant instructional treatments, then educational Valhalla would be upon us. At a theoretical level I can applaud such a stance, but in my pragmatic heart of hearts I really doubt that this can be pulled off, at least in my lifetime. The practical problems are too sticky.

With present propositions, however, this does not seem to be the case. Surely there will be technical, procedural questions which must be dealt with. For example, exactly which groups will be involved in rating the objectives that will result in the selection of goals for the system? How many learners should be tested in order to yield reasonable estimates regarding the progress of the system as well as its final output? What kinds of departures from anticipated progress should dictate modifications in the system? These

and other problems can be faced and, I believe, resolved by individuals wishing to seriously monitor the progress of a large scale educational enterprise.

But that kind of operation takes more money than most educators have been willing to spend. Other than the recently initiated Experimental Schools Program of the U.S. Office of Education we see few large scale educational enterprises in which ample funds have been set aside for evaluation. Most state and local school systems operate under an explicit evaluation budget of less than one per cent, if that much. The kind of evaluation endeavor we're talking about here clearly will demand resources of around five per cent or better. The first blush reluctance of individuals to spend that kind of money should be countered by hard nosed estimates of the benefits, both economic and educational, which can be derived from rigorously evaluating the progress of a large scale educational undertaking.

Perfection and Imperfectability

Some detractors will allege quite accurately that systems approaches such as those described here are laden with flaws. Surely by using objectives-based systems we will discover that certain critical features of the educational system are not appraised with sufficient sensitivity to yield the right kind of information for making proper decisions. When faced with these kinds of criticisms, however, I am reminded that decisions must currently be made regarding educational enterprises, day in and day out. And at the moment these decisions are being made with far less sophistication, far less data, and far less accuracy than might be rendered under

a system such as that proposed herein. Granted that a systems analysis approach is not perfect, it nevertheless seems to offer a clear improvement over the general quality of decision making seen so prevalently these days in educational arenas. And, perhaps more importantly, because of its systematic nature such an approach is amenable to technical self-correction and, over time, incremental improvement so that even if the management system lacks total perfection, it will be so close that the learners it serves won't know the difference.